GUTHION RESIDUE ON PEACH TREES
SUTTER COUNTY, JUNE 1975

By

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HS-179

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Guthion (azinphosmethyl) is widely used on peaches and other stone fruit crops for control of aphids, scale insects, leaf rollers, and peach twig borers. The maximum dosage recommended on the Chemagro Guthion 2S label is 3 pounds active ingredient per acre at a spray concentration of 3/8 pound active ingredient per 100 gallons or up to 3 pounds active ingredient may be applied as a low volume or ultra low volume spray. The California reentry safety interval for Guthion applications to peaches is 14 days. In order to measure the dissipation rate of dislodgeable Guthion residue on peach foliage, a treated orchard was sampled at weekly intervals following application.

The application was made in conjunction with a worker reentry study conducted by the Food Protection and Toxicology Center of the University of California at Davis in which both foliar residue and physiological response of workers entering the recently treated orchard were monitered. The study application deviated from label recommendations in that 3 pounds of actual Guthion per acre was applied at the relatively low volume of 100 gallons per acre.

Experimental Design

Three leaf disc samples were collected at each sampling interval by means of a leaf punch. Each sample contained 100 leaf discs, obtained 4 from each tree, from three separate 25 tree lots.

The samples were collected in 4.5 x 10 cm jars and immediately placed in ice upon leaving the orchard. Chemical extraction was completed within 8 hours of sampling. Samples taken from lots 1 and 2 were analyzed from dislodgeable and penetrated Guthion and the sample from lot 3 was analyzed for total residue. The procedures used in the extraction of dislodgeable, penetrated, and total residues from leaf discs is described separately in an attachment. Ethyl acetate was used to extract the dislodgeable stripping solution and blended leaf tissue. Analysis was by Gas Chromatography.

Gas Chromatography

The gas chromatograph used was a Varian 2100 series used under the following conditions:

Detector	- Flame photometric @ 250°C
Column	- Glass 26" x 2mm I.D. of 3% OV-17 on 100/120 Gas Chom Q (Carborwax vapor deposition treated) @ 220°C
Detector gas flow rates	- H_2 - 100 ml/min. air - 80 ml/min.
Carrier gas	- N_2 @ 40 ml/min.
Guthion retention time	- 5 min.

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Results

Guthion residue levels observed are listed below:

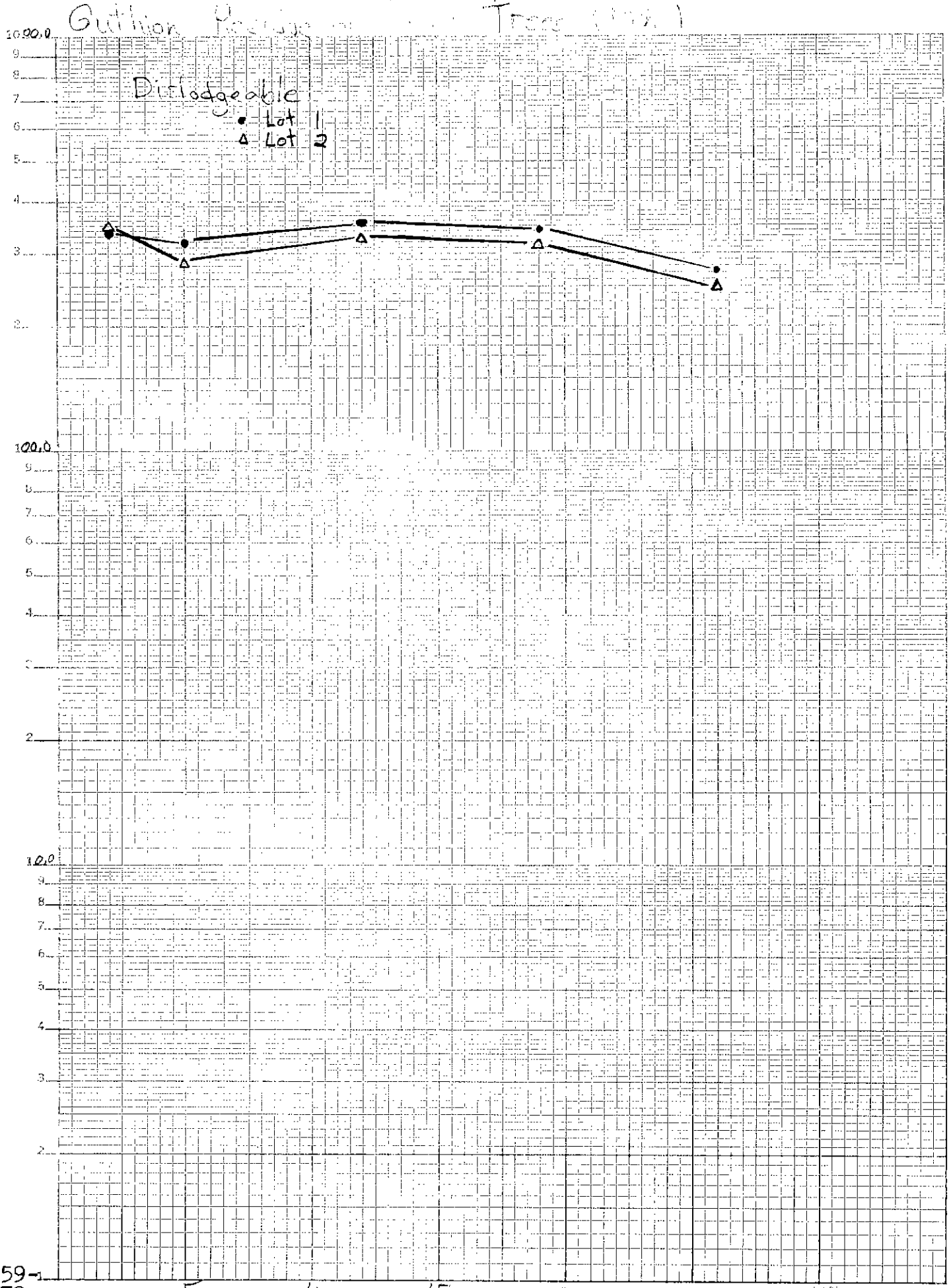
Days Post		Dislodgeable Residue		Penetrated Residue		Total Residue
		PPM		PPM		PPM
Date	Application	lot 1	lot 2	lot 1	lot 2	lot 3
6/9	2	333	345	85	63	361
6/12	5	316	288	47	40	407
6/19	12	357	325	57	54	443
6/26	19	347	319	46	50	276
7/3	26	271	247	36	34	350

These data indicate Guthion persists on peach leaves beyond the capability of this short-term study to measure its dissipation rate. The failure of a decline in residue levels to be evidenced within the first 19 days may have been the result of leaf shrinkage induced by the onset of hot, dry weather.

DAILY TEMPERATURE AND PRECIPITATION OBSERVATIONS

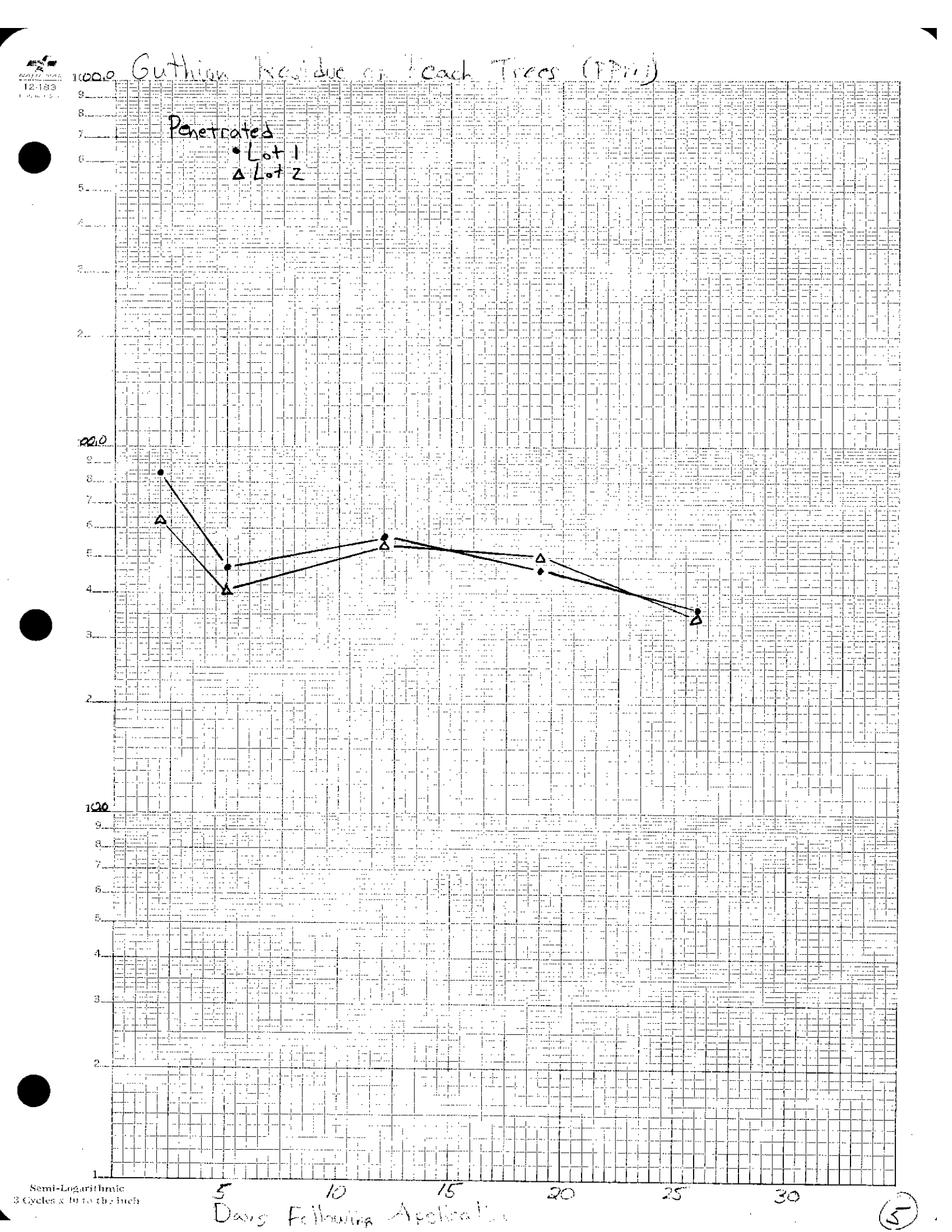
RECORDED BY THE MARYSVILLE FIRE DEPARTMENT, YUBA CITY, CALIFORNIA

Date	Temperature (°F) 24 hour period ending at 9:00 a.m. Maximum	Minimum	Precipitation (inches) 24 hour amounts ending at 9:00 a.m.
6/7	90	54	
8	91	64	
9	94	67	
10	96	64	
11	100	62	
12	92	58	
13	97	69	
14	104	63	
15	99	58	
16	89	56	
17	88	56	
18	83	53	
19	85	52	
20	72	52	
21	86	54	
22	87	55	
23	92	54	
24	81	53	.11
25	73	48	.03
26	80	55	
27	88	56	
28	86	57	
29	94	60	
30	91	55	
7/1	86	51	
2	8	51	
3	86	53	
			.14

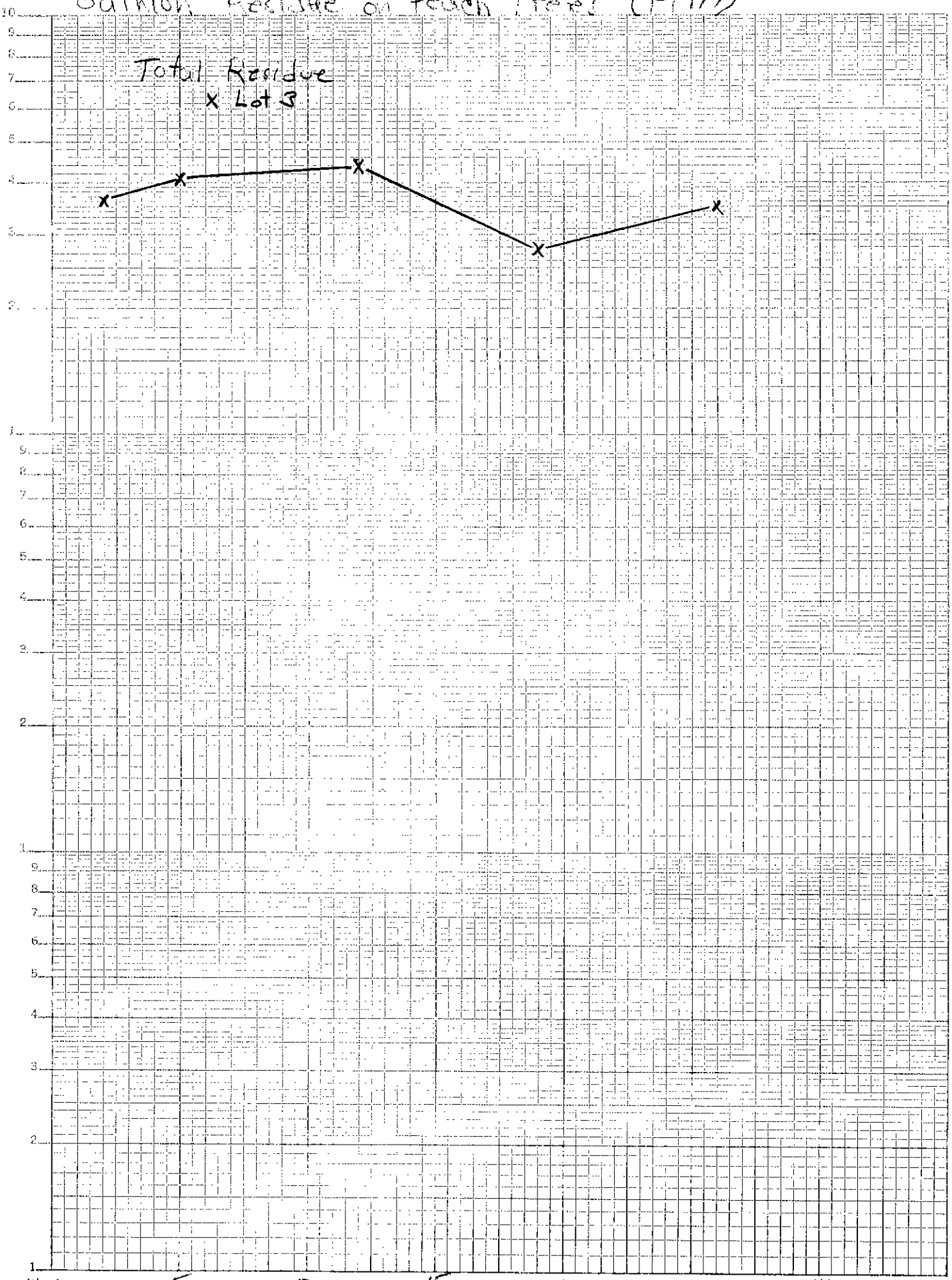


ACF 59-1
Semi-Logarithmic
3 Cycles x 10 to the inch

(4)


Guthion Residue on Peach Trees (PPM)
Penetrated
• Lot 1
Δ Lot 2
1000.0
100.0
10.0
1.0
5
10
15
20
25
30
Days Following Application
Semi-Logarithmic
3 Cycles x 10 to the Inch

Gathion Residue on Peach Trees (PH-11)



Semi-Logarithmic
3 Cycles x 10 to the inch

Addendum to HS-179
Recalculation of Dislodgeable Residues

Results of Analysis Peach Foliage for
Dislodgeable Residues of Azinphos-methyl

Sample Interval	Residue (ug/cm2)
2 days	2.485
5 days	2.455
12 days	2.862
19 days	1.329
26 days	NS

NS - no sample or missing data